

WHAT IS CLAIMED IS:

1. A computer system, comprising:
 - a cooling fan configured to adjust an internal temperature of the computer system;
 - a pulse width modulation (PWM) control signal generator configured to control a rotation speed of the cooling fan according to the internal temperature of the computer system, wherein the PWM control signal generator is configured to generate first resolution PWM control signals; and
 - a controller configured to control the PWM control signal generator to output a combination of different first resolution PWM control signals.
2. The computer system of claim 1, wherein the combination of different first resolution PWM control signals is output in a single driving cycle of the fan.
3. The computer system of claim 2, wherein the driving cycle is 16 milliseconds.
4. The computer system of claim 1, wherein the combination of different first resolution PWM control signals are alternate sequential first resolution PWM control signals at a predetermined time ratio.
5. The computer system of claim 1, wherein the PWM control signal

generator is configured by hardware, and wherein the controller is configured by software.

6. The computer system of claim 1, wherein the controller selects one second resolution PWM control signals corresponding to a selected rotation speed of the cooling fan, wherein the second resolution control signals are higher resolution than the first resolution PWM control signals, and wherein the combination of different first resolution PWM control signals approximates the selected second resolution signal.

7. The computer system of claim 6, wherein the combination of different first resolution PWM control signals signals are alternately outputted and each are selected as two of the first resolution PWM signal having rotation speeds closest to the corresponding rotation speed of the cooling fan corresponding to the selected second resolution PWM control signal.

8. The computer system of claim 7, wherein the corresponding two first resolution PWM control signals are alternately outputted according to the predetermined time ratio calculated on the basis of step differences between two steps of the second resolution corresponding to the selected two steps of the first resolution and the selected one step of the second resolution, the step differences being calculated on the basis of the steps of the second resolution.

9. The computer system of claim 8, wherein the predetermined time ratio is

proportional to reciprocal numbers of the calculated step differences.

10. The computer system of claim 1, wherein a period in which said plurality of different PWM control signals of the first resolution are alternately outputted is shorter than a period corresponding to a response speed of the cooling fan.

11. An apparatus for controlling a fan drive in a computer system including a cooling fan, comprising:

pulse width modulation (PWM) control signal generation means for adjusting a rotation speed of the cooling fan according to an internal temperature of the computer system, the PWM control signal generation means generating PWM control signals corresponding to steps of first resolution; and

control means for controlling the PWM control signal generation means, the control means referring to information of steps of second resolution higher than the first resolution to control the PWM control signal generation means to alternately output a plurality of different PWM control signals at a predetermined time ratio, the different PWM control signals corresponding to said steps of the first resolution.

12. The apparatus of claim 11, wherein the PWM control signal generation means is configured by hardware, and wherein the control means is configured by software.

13. The apparatus of claim 11, wherein the control means selects one step

corresponding to a selected rotation speed of the cooling fan from the information of the steps of the second resolution, refers to the information of the selected step, and controls the PWM control signal generation means.

14. The apparatus of claim 13, wherein said steps whose PWM control signals are alternately outputted are selected as two steps of the first resolution having rotation speeds closest to the rotation speed of the cooling fan corresponding to the selected one step of the second resolution.

15. The apparatus of claim 14, wherein the PWM control signals corresponding to the selected two steps of the first resolution are alternately outputted according to the predetermined time ratio calculated on the basis of step differences between two steps of the second resolution corresponding to the selected two steps of the first resolution and the selected one step of the second resolution, the step differences being calculated on the basis of the steps of the second resolution.

16. The apparatus of claim 15, wherein the predetermined time ratio is proportional to reciprocal numbers of the calculated step differences.

17. The apparatus of claim 11, wherein a period in which said plurality of different PWM control signals of the first resolution are alternately outputted is shorter than a period corresponding to a response speed of the cooling fan.

18. A method for controlling a fan drive in a computer system, comprising:

determining a rotation speed of a cooling fan correlated to control an internal temperature of the computer system;

selecting at least two first resolution PWM control signals corresponding to the determined rotation speed from among the first resolution PWM control signals; and

outputting a combination of said at least two first resolution PWM control signals to control said rotation speed.

19. The method of claim 18, comprising identifying a second higher resolution PWM control signal corresponding to the determined cooling fan rotation speed, and wherein the determined rotation speed is information closest to an desired rotation speed of the cooling fan among the information of the steps of the second resolution.

20. The method of claim 19, wherein said at least two first resolution PWM control signals are output at a predetermined time ratio, wherein the predetermined time ratio is calculated on the basis of step differences between two steps of the second resolution corresponding to the selected two steps of the first resolution and a step of the second resolution having the determined rotation speed, the step differences being calculated on the basis of the steps of the second resolution.

21. The method of claim 20, wherein the predetermined time ratio is

proportional to reciprocal numbers of the calculated step differences.

22. The method of claim 18, wherein a period in which said at least two first resolution PWM signals are alternately outputted is shorter than a period corresponding to a response speed of the cooling fan.

23. An article including a machine-readable storage medium containing instructions for operating a computer system, the instructions, when executed, causing the computer system to:

identify second resolution driving patterns higher than first resolution driving patterns to select one second resolution driving pattern for a device;

select two first resolution driving patterns with a prescribed relationship to the selected second resolution driving pattern from among the first resolution driving patterns; and

output control signals for the device corresponding to the selected two first resolution driving patterns at a predetermined time ratio according to the selected second resolution driving pattern.

24. The article of claim 23, wherein the first and second driving patterns correspond to PWM control signals and the device is a cooling fan.

25. The article of claim 23, wherein the device is a cooling fan, wherein the

driving patterns correspond to rotation speeds of the cooling fan, and wherein a designated rotation speed of the cooling fan corresponds to the selected second resolution driving patterns.

26. The article of claim 25, wherein the predetermined time ratio is calculated on the basis of step differences between two steps of the second resolution driving patterns corresponding to the selected two first resolution driving patterns and a step of the second resolution having the confirmed rotation speed, the step differences being calculated on the basis of the steps of the second resolution.

27. The article of claim 26, wherein the predetermined time ratio is proportional to reciprocal numbers of the calculated step differences.

28. The article of claim 23, wherein a period in which PWM control signals corresponding to the selected two steps are alternately outputted is shorter than a period corresponding to a response speed of a cooling fan by a predetermined ratio.

29. The article of claim 23, wherein the device is an illuminating lamp of a display.